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| APPLICATION NO.           | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.           | CONFIRMATION NO. |
|---------------------------|-------------|----------------------|-------------------------------|------------------|
| 10/723,159                | 11/26/2003  | Yong-Hee Lee         | 8028-34<br>(SPX200211-0004US) | 9229             |
| 7590                      | 09/09/2004  |                      | EXAMINER                      |                  |
| Frank Chau                |             |                      | NGUYEN, KHAL M                |                  |
| F. CHAU & ASSOCIATES, LLP |             |                      | ART UNIT                      | PAPER NUMBER     |
| Suite 501                 |             |                      |                               |                  |
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DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                            |                  |
|------------------------------|----------------------------|------------------|
| <b>Office Action Summary</b> | Application No.            | Applicant(s)     |
|                              | 10/723,159                 | LEE, YONG-HEE    |
|                              | Examiner<br>Khai M. Nguyen | Art Unit<br>2819 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 26 November 2003.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-18 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 6-18 is/are allowed.  
 6) Claim(s) 1 and 3-5 is/are rejected.  
 7) Claim(s) 2 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
     1. Certified copies of the priority documents have been received.  
     2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
     3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)          |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Specification***

1. The application has not been checked to the extent necessary to determine the presence of all possible typographical and grammatical errors. However, Applicant's cooperation is requested in correcting any errors of which he/she may become aware in the application.

### ***Priority***

2. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Korea on January 03, 2003. It is noted, however, that applicant has not filed a certified copy of the 2003-354 application as required by 35 U.S.C. 119(b).

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Hofelt (US 4,468,790). Hofelt discloses (Fig. 4) a sigma-delta modulator, comprising: an integration unit (DF1 and G1), having a subtractor and an integrator unit G1, for receiving analog input signal (X) and for outputting an integrated signal; and a 1-bit quantizer (Q1') for quantizing the integrated signal output by the integration unit and for outputting a first quantized digital signal (Y); and a multi-level quantizer (Q2; column 6,

lines 3-6) for quantizing the signal outputted by the integration unit and for outputting a second quantized digital signal (V).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hofelt (US 4,468,790) in view of the applicant's admitted prior art (hereinafter, AAPA). In addition to the teaching of claim 1, the modulator of Hofelt, Fig. 4, includes 1-bit DAC (D/A CONV. – in the feedback loop) for converting the quantized signal outputted by the quantizer (Q1') into a quantized analog signal (see Fig. 4). Hofelt is silent about the integration unit of the claimed invention of claim 4, which includes a plurality of integrating stages connected in series, wherein each integrating stage includes a subtractor. The AAPA (see Fig. 3 and page 5, line 2+ or U.S. Patent No. 6,300,890, Figs. 1-4) discloses a sigma-delta modulator that includes the integration unit as claimed in the claim 4. Therefore, it would have been obvious to one person having ordinary skill in the art at the time the invention was made to use a multi-stage integration unit as taught/suggested by the prior art Fig. 3 or by Figs. 1-4 of the U.S. Patent No. '890 for, at least in part, improving the sigma-delta modulator (see column 1, line 6+ of the patent '890).

***Allowable Subject Matter***

7. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. Claims 6-18 are allowed.

***Prior Art***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclose (see the attached PTO-892).

***Contact Information***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khai M. Nguyen whose telephone number is 571-272-1809. The examiner can normally be reached on 8:30 to 5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael J Tokar can be reached on 571-272-1812. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KN  
August 26, 2004



Michael Tokar  
Supervisory Patent Examiner  
Technology Center 2800